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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,872	07/16/2003	Noboru Asauchi	405507/0013	9098

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EXAMINER

MRUK, GEOFFREY S

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/620,872

Applicant(s)

ASAUCHI ET AL.

Examiner

Geoffrey Mruk

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 12-19 is/are rejected.
- 7) ☒ Claim(s) 8-11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 18 January 2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

Claim 17 is objected to because of the following informalities: "indicates there is not such correspondence". Examiner suggests changing to "indicates there is no such correspondence".

Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 5-7, 12, 13, and 15-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Mochizuki et al. (US 6,685,296 B2).

With respect to Claim 1, Mochizuki discloses a cartridge (Fig. 12, element 511a) having a chamber to hold a recording material (Fig. 12, element 513) used for printing therein, said cartridge being mountable on a printing apparatus (Fig. 40, element 600), said cartridge comprising:

- a sensor (Fig. 10, element 25) that detects a state of the recording material held in the chamber;
- a condition reception module (Fig. 10, element 29) that receives an externally specified detection condition (Fig. 10, element 30) of said sensor;
- a detection module (Fig. 10, element 26) that performs a detection under the specified detection condition (Fig. 11, element S24);
- an output module (Fig. 10, element 28) that outputs a result of the detection (Column 18, lines 5-67).

With respect to Claim 2, Mochizuki discloses the output module (Fig. 10, element 28) outputs data corresponding to the specified detection condition (Fig. 11, element S24), together with the result of the detection (Column 18, lines 25-67; Column 19, lines 1-18).

With respect to Claim 3, the recording material is an ink of a predetermined color (Column 39, lines 38-54).

With respect to Claim 5, Mochizuki discloses the sensor (Fig. 10, element 25) detects presence or absence of the recording material in the chamber (Column 18, lines 59-67).

With respect to Claim 6, Mochizuki discloses the sensor measures at least one of a temperature a viscosity, a humidity, a particle size, a hue a remaining quantity, and a pressure of the recording material (Column 18, lines 59-66).

With respect to Claim 7, Mochizuki discloses an output module (Fig. 10, element 28) outputs the result of the detection by electric wave or the like (Fig. 10, element 30,

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Column 19, lines 8-18). Electric waves are commonly known as radio waves as stated by Amini in US 2003/0117142 A1 (paragraph 7).

With respect to Claim 12, Mochizuki discloses a cartridge further comprising a memory (Fig. 10, element 27) that stores a parameter corresponding to the state of the recording material held in the chamber (Column 18, lines 59-67).

With respect to Claim 13, Mochizuki discloses a cartridge further comprising:

- a radio communication module (Fig. 10, elements 28 and 29) that transmits data to and from the printing apparatus (Column 1, lines 8-20) by radio communication (Fig. 10, element 30, Column 19, lines 8-18),
- wherein the cartridge receives the externally specified detection condition from the printing apparatus via said radio communication module.

With respect to Claim 15, Mochizuki discloses a printing apparatus (Fig. 40, element 600) with a cartridge (Fig. 12, element 511a) mounted thereon, said cartridge having a chamber that holds a recording material (Fig. 12, element 513) used for printing, said cartridge comprising:

- a sensor (Fig. 10, element 25) that detects a state of the recording material held in the chamber;
- a condition reception module (Fig. 10, element 29) that receives an externally specified detection condition (Fig. 10, element 30) of said sensor;
- a detection module (Fig. 10, element 26) that carries out a detection under the specified detection condition (Fig. 11, element S24); and

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- an output module (Fig. 10, element 28) that outputs a result of the detection, said printing apparatus further comprising:
- a condition specification module (Fig. 10, Outside A or B) that specifies the detection conditions (Column 18, lines 65-67)
- an input module (Fig. 10, Output A, B, C) that receives the result of the detection output from said output module of said cartridge;
- a verification module (Fig. 10, element 26) that verifies (Fig 11, step S26) the result of the detection (Column 18, lines 5-66; Column 19, lines 1-18).

With respect to Claim 16, Mochizuki discloses an output module (Fig. 10, element 28) of said cartridge outputs data corresponding to the specified detection condition (Fig. 10, element 30), together with the result of the detection (Column 18, lines 59-67; Column 19, lines 1-18),

- said input module (Fig. 10, Outside A, B, C) of said printing apparatus receives the output data, together with the result of the detection output from said output module (Fig. 10, element 28) of said cartridge, and
- said verification module (Fig. 10, element 26) of said printing apparatus compares (Fig. 11, step S24) the input data with the detection condition specified by said condition specification module, verifies validity of the detection result if there is correspondence (Fig. 11, step S26) between the input data and the specified detection condition, and carries out a preset series of processing (Column 18, lines 25-44) relating to the state of the recording material (Column 22, lines 59-67; Column 23, lines 1-3).

With respect to Claim 17, Mochizuki discloses a verification module (Fig. 10, element 26) comprises a notification element that, if there is no correspondence between the input data and the detection condition specified by said condition specification module, indicates there is no such correspondence (Fig. 11, step S25; Column 19, lines 1-6).

With respect to Claim 18, Mochizuki discloses a method of transmitting information (Fig 10, element 30) to and from a cartridge (Fig. 12, element 511a), which has a chamber (Fig. 12, element 512) that holds a recording material (Fig. 12, element 513) used for printing therein, said information transmission method comprising the steps of:

- externally specifying a detection condition (Fig. 10, element 30) of a sensor (Fig. 10, element 25), which is mounted on said cartridge and is used to detect a state of the recording material held in the chamber, from an outside of said cartridge; and
- making a result of detection, which is carried out in said cartridge by said sensor under the specified detection condition, output (Fig. 10, element 28) from said cartridge to the outside that has given the external specification (Column 18, lines 5-67; Column 19, lines 1-31).

With respect to Claim 19, Mochizuki discloses a method of transmitting information (Fig 10, element 30) to and from a cartridge (Fig. 12, element 511a), which has a chamber (Fig. 12, element 512) to hold a recording material (Fig. 12, element 513) used for printing therein, said information transmission method comprising the steps of:

- externally specifying a detection condition (Fig. 10, element 30) of a sensor (Fig. 10, element 25), which is mounted on said cartridge and is used to detect a state

of the recording material held in the chamber, from an outside (Fig. 10, element Outside A or B) of said cartridge;

- making data corresponding to the specified detection condition (Fig. 10, element 30), together with a result of detection carried out in said cartridge by said sensor (Fig. 10, element 25) under the specified detection condition,
- output (Fig 10, element 30) from said cartridge to the outside of said cartridge; and
- verifying a correspondency (Fig. 11, steps S24-S26) of the output data to the specified detection condition, so as to determine validity of the detection result (Column 18, lines 5-67; Column 19, lines 1-31).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was



not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mochizuki et al. US 6,685,296 in view of Chida et al. (US 6,016,519).

Mochizuki discloses the claimed invention with the exception of the recording material within the cartridge being ink instead of toner. Chida teaches that it is well known in the ink jet art to use the same type of level detection to measure the level of both toner and a liquid ink (Column 8, lines 2-4). Because these two recording materials were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to use the fluid level detection of Mochizuki for the purpose of measuring the level of toner in any type of printing apparatus that uses toner.

2. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mochizuki et al. (US 6,685,296) in view of Walker (US 2003/0128245 A1) and Marthinsson et al. (US 5,673,053).

Mochizuki teaches the claimed invention with the exception of specifying the loop antenna on the radio communication module, used for radio communication between the cartridge and the control device (Column 19, lines 8-15).

Walker discloses a cartridge (Fig. 2, element 24) that contains an antenna portion (Fig. 3, element 40) used to transmit radio communication between the cartridge and the controller (Column 7, lines 13-32).

Marthinsson discloses the specific reasons for using a loop antenna. The reasons being the loop antenna may be given an exceptionally small size, an easily adapted design (Column 2, lines 14-15), and that it may be easily arranged on a printed circuit board together with the impedance matching unit (Column 3, lines 10-12). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to provide Mochizuki with a loop antenna. The motivation for doing so would have been the loop antenna may be given an exceptionally small size, an easily adapted design, and that it may be easily arranged on a printed circuit board in order to allow radio communication between the cartridge and the control device, as taught by Walker and Marthinsson.

#### ***Allowable Subject Matter***

Claims 8-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to teach a fluid level detection for a cartridge, wherein a detection module applies an excitation pulse to a piezoelectric element and measures the vibration of the piezoelectric element in response to the excitation pulse.

### ***Response to Arguments***

Applicant's arguments filed 28 March 2005 have been fully considered but they are not persuasive.

The Applicant's argument that Mochizuki "does not disclose or even suggest specifying a detection condition under which a sensor detects the state of a recording material held in a cartridge" is not persuasive. However, as cited in the first action rejection and by applicant's remarks, Mochizuki states "In this state, the signal 30 for inquiring about the information on the inside of the ink tank is sent from the outside A or B to the element 21. This input signal 30 is a signal for inquiring the element, for example, if ink is still left in the ink tank and is received by the receiving means 29 (step S21 of FIG. 11). Then, the discriminating means 26 causes the information acquiring means 25 to acquire information on the inside of the ink tank such as an ink residual amount, a type of ink, temperature and pH (step S22 of FIG. 11) and reads conditions for comparing with the acquired information on the inside of the tank from the information storing means 27 (step S23 of FIG. 11) to determine if the acquired information on the inside of the tank meets set conditions (step S24 of FIG. 11)" (Column 18, lines 54-67). Furthermore, "If the discriminating means 26 determines that the acquired information does not meet the set conditions in step S24, it communicates

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that effect, and if the discriminating means 26 determines that the acquired information meets the set conditions, it communicates that effect to the outside A, B or C (steps S25 and S26). At this point, the acquired information may be communicated together with the determination result" (Column 19, lines 1-8). Therefore, Mochizuki meets the claimed limitations.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Anderson et al. (US 6,044,694) discloses piezoelectric benders for fluid property sensing in vessels where "driving the bender at its natural resonance frequency by means of a feedback loop" (Column 4, lines 45-47) .

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is (571) 272-2810. The examiner can normally be reached on 7am - 330pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GSM  
4/14/2005



**MANISH S. SHAH**  
**PRIMARY EXAMINER**  
4/21/05